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Mansur, Alfian

Fiscal Policy Agency, Ministry of Finance of the Republic of  
Indonesia, Australian National University

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# The Impacts of the United States Fiscal Deficit Reduction to the World Economy\*

Alfan Mansur

Australian National University

## Abstract

Since 1970s the US government has run considerable increasing budget deficits in general with the peak in 2009, just after global financial crisis in 2008. Using a small G-cubed model, this paper assesses the impact of the US fiscal deficit reduction to the World Economy. The results show that a permanent rapid shock in the US economy is less contractionary to the US economy and leads to more expansionary stimulus to the rest of the world in the short run. Under the phased US budget cuts, the US economy runs into higher adjustment costs of asset prices, so the economy worsens more in the medium run. Under the global scenario where the US deficits cut is followed by the rest of the world, the demand shocks are positively transmitted to the rest of the world. In order to gain the sustainable growth of the world economy in the long run, the global scenario is the best option because there will be enough incentives brought on the economies through forward looking responses.

**Keywords:** fiscal; deficits; shocks; global

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# 1 Introduction

Since 1970s the US government has run considerable increasing budget deficits in general with the peak in 2009, just after global financial crisis in 2008. Romer (2012, p. 584) predicts that there seems to be strong increase in the number of retired people compared to working age people in the next decades which could be resulting in more deficits increase through health care and social spending. He then argues that these persistent and large budget deficits can be problematic since it could slow the growth down if too long and too large (p. 584).

In order to pursue sustainable long term budget contribution to the growth, the United States (US) government needs to cut its fiscal deficit. This paper argues that the cut of the US fiscal deficit will affect the world economy through either positive or negative transmission relative to the forward looking responses of the agents both in the US and in the rest of the world. This paper aims to investigate the effects of such budget deficit reduction both to the US economy and to the rest of the world economy.

The framework used to analyze is the small G-cubed model as will be described in the following section. There will be two scenarios, first, US rapid scenario which is a permanent reduction in the US fiscal deficit of 1 per cent of GDP forever completely commenced in year 1, compared with US phased scenario at which the reduction is undertaken gradually by 0.2 per cent of GDP in year 1, 0.4 per cent in year 2, 0.6 per cent in year 3, 0.8 per cent in year 4 and 1 per cent from year 5 forever. Second is the global scenario at which the rapid scenario by US is followed by the same scenario by the rest of the world.

The rest of this paper is divided into two sections. Next section describes the model and the other following section explores the implications of the distinct scenarios followed by conclusions drawn.

## 2 The Model

The G-cubed model is an inter-temporal general equilibrium model which combining modern macroeconomics, econometric general equilibrium modeling and theory of inter-

national trade (McKibbin Wilcoxon 2013, p. 995). Some key features of this model at which McKibbin and Wilcoxon (2013) and McKibbin and Tan (2009) point out are as follows.

First, flows and stocks are treated explicitly at which investment brings about capital accumulation, fiscal deficits bring about government debt accumulation and current account deficits bring about increasing foreign demands contrary to domestic productions (McKibbin Tan 2009, p. 1035).

Second, households decide based on their forward looking expectations and firms are not necessarily optimal in the short run, but optimal in the long run. While physical capital is sticky within sectors and within regions, financial capital instead is able to instantaneously flow to where highest expected returns are yielded (McKibbin Wilcoxon 2013, p. 997).

Another key feature is that global accounting identities are carried out in this model (McKibbin Stoeckel 2011, p. 8). For instance, a current account deficit accumulated into foreign entitlements on domestic output has to be counterbalanced by trade surpluses in the future (p. 8). On the fiscal issues, fiscal deficit accumulated into government debt has to be counterbalanced by revenues in the future (p. 8). All those features make it reliable in assessing a number of macroeconomic policy issues.

In this small G-cubed model used in this paper, there are two sectors, energy and non-energy and the world is divided into two groups, US and non-United States (non-US) for the rest of the world. As US is treated as the half of the world economy, a fiscal policy implemented by US will be likely to have significant impact to the global economy.

### **3 Implications of permanent reduction in the US fiscal deficit**

The first scenario examines the difference of how US fiscal deficit reduction affects the economy both nationally and globally if it is directly implemented since the first year compared with gradual execution. The second is the global scenario at which the rapid scenario by US is also followed by the same permanent reduction by the rest of the world.

The results exhibited in figures 1, 2, 3 and 4 are expressed in percentage of deviation which shows a comparison to the baseline of the model (McKibbin Stoeckel 2011, p. 11). A zero denotes that a variable does not change from the baseline (p. 11).

### **3.1 Scenario 1: Permanent reduction of US fiscal deficit, completed in year 1 (rapid) vs gradual (phased)**

Under the rapid scenario, an immediate cut of budget deficit causes an instantaneous dropping US GDP due to the removal of the government spending from the economy. It implies that the US economy promptly contracts after the rapid scenario is executed. Following this, interest rates are reduced as a cyclical adjustment. These cuts are expected to mitigate the impact of fiscal contraction on investment and consumption (Romer Romer 1989, 2010 cited in IMF 2010, p. 94). Reductions in the US interest rates also generate impacts on the international linkages because US is a large economy, half of the world in this model. Thus, the interest rates in the rest of the world fall.

US Consumption falls as incomes drop since output is slowed down in the short run. In the long run, real interest rate fall leads to relative price of consumption to drop across time and it results in consumption inter temporal shifts from future to present. US consumption therefore rises in the long run.

Lower both short run and long run interest rates also imply that a lower cost of borrowing is generated. It triggers rising investment and growing capital stock in the long run. At the same time, in short run, contracted US economy makes investors less attracted and it affects capital out-flowing to the rest of the world as financial capital is perfectly mobile in this model. The rest of the world gains capital inflows which boost up their capital stocks and output. Their consumption enhances as the output is boosted. The capital outflows then lead to depreciation of US dollars and hiking inflation, while the currency of the rest of the world appreciates instead, and inflation drops.

Meanwhile, the US dollars depreciation brings improvement in the US trade balance in short run which positively contribute to the US output. Allsop et al. (1999) notes that a successful budget deficit has to be followed by improved balance of payments or falling private surplus (p. 292). In contrast, the trade balance of the rest of the world

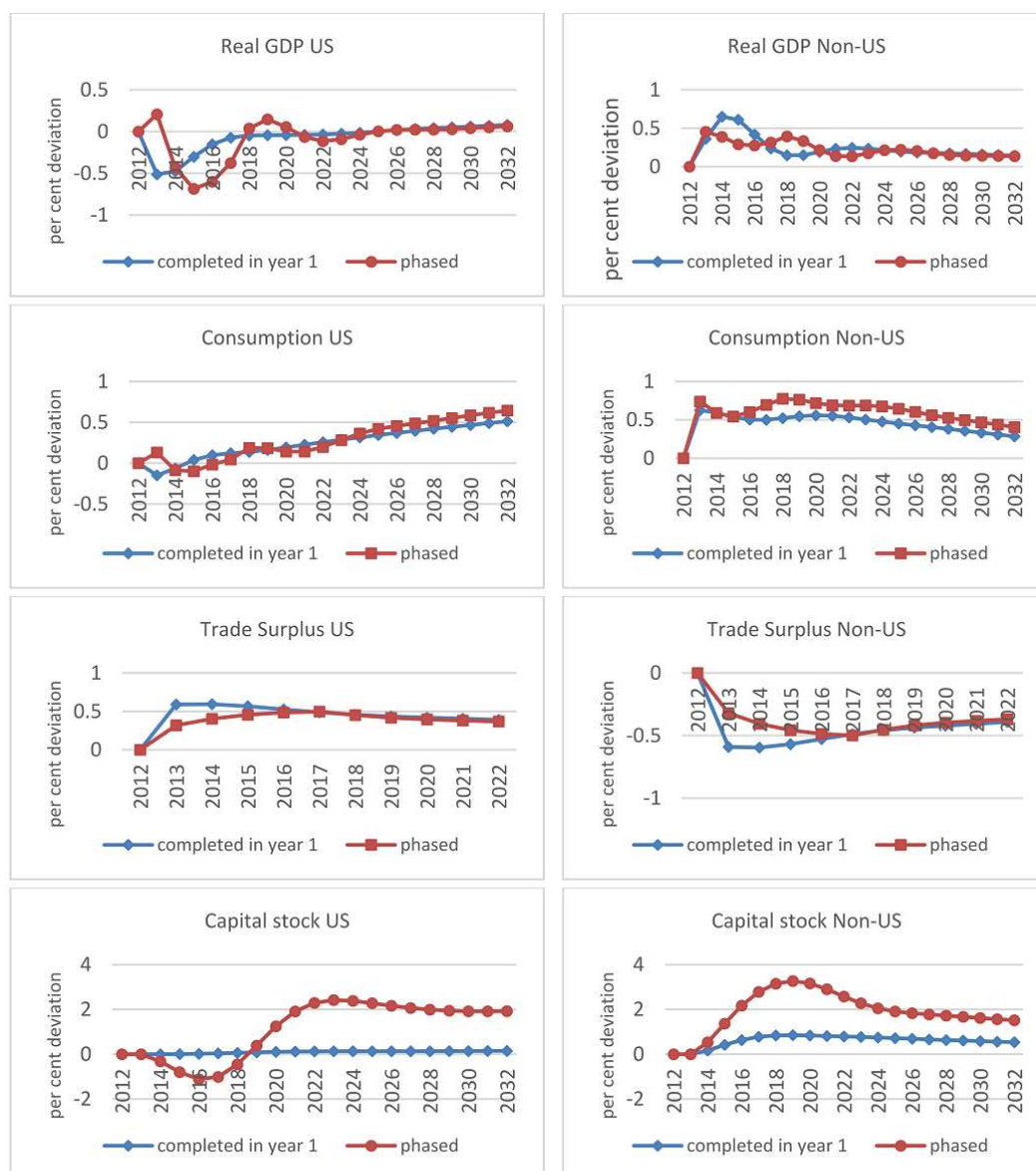


Figure 1: Effects on national account, completed in year 1 vs gradual - Simulation with G-Cubed (v114) model

worsens off as their exported goods are becoming more costly. US Private consumption will be crowded in as the government spending falls forever. Capital flows back into US as the contraction has been sustained. All these combined together trigger US real GDP to be growing in the long run, whereas, the economy of the rest of the world is slowing down back to baseline in long run. In short terms, the US demand shock is transmitted to the rest of the world negatively.

Under the phased scenario, because there is no significant adjustment of monetary

policy to ease the fiscal contraction, US economy suffers massive capital outflows but US dollars is depreciated lower which yields lower trade balance improvement. On the contrary, the rest of the world advantages huge capital inflows and less currency appreciation giving less worsening trade balance. US dollar lower depreciation also implies that the inflation rate rise is not as high as under rapid scenario.

In addition, in G-Cubed model, government revenues are from sales tax, personal income and corporate taxes, and also from new bonds sales, while the government budget constraint is the stock of debt which equals budget deficit (McKibbin Wilcoxon 1999, pp. 132–133). A budget deficit today must be compensated by budget surplus in the future to ensure that the debt interest is payable. Taxes levied in each period equals to the interest paid, so that budget deficit decrease results in decrease in interests of bonds which have to be paid. Taxes fall accordingly. As the government debt ratio to GDP is unchanged in the long run, fall in budget deficit also implies that the government does not need to issue new bonds as much as before. Lower government stock of bonds and lower taxes will eventually generate savings which will boost output in the long run. In the meantime, policy on taxes and bonds in the rest of the world is unaffected (see Figure 2 bottom panels).

### **3.2 Scenario 2 (global): Permanent US fiscal deficit reduction directly followed by the same policy undertaken by the rest of the world**

This second scenario investigates the effect if both US and the rest of the world run the same demand shocks of budget deficit cut by 1 per cent forever. Figures 3 and 4 show that both encounter the same effects. A shock is transmitted in a positive way if it affects the same on both countries real GDP (McKibbin Tan 2009, p. 1039). Thus, it is clear that the shocks of budget deficit cut are positively transmitted as they have the same effects on both US and the rest of the worlds real GDP.

The main difference of the results between rapid scenario undertaken by US only and global scenario is the transmissions. Under rapid scenario by US only, the shock

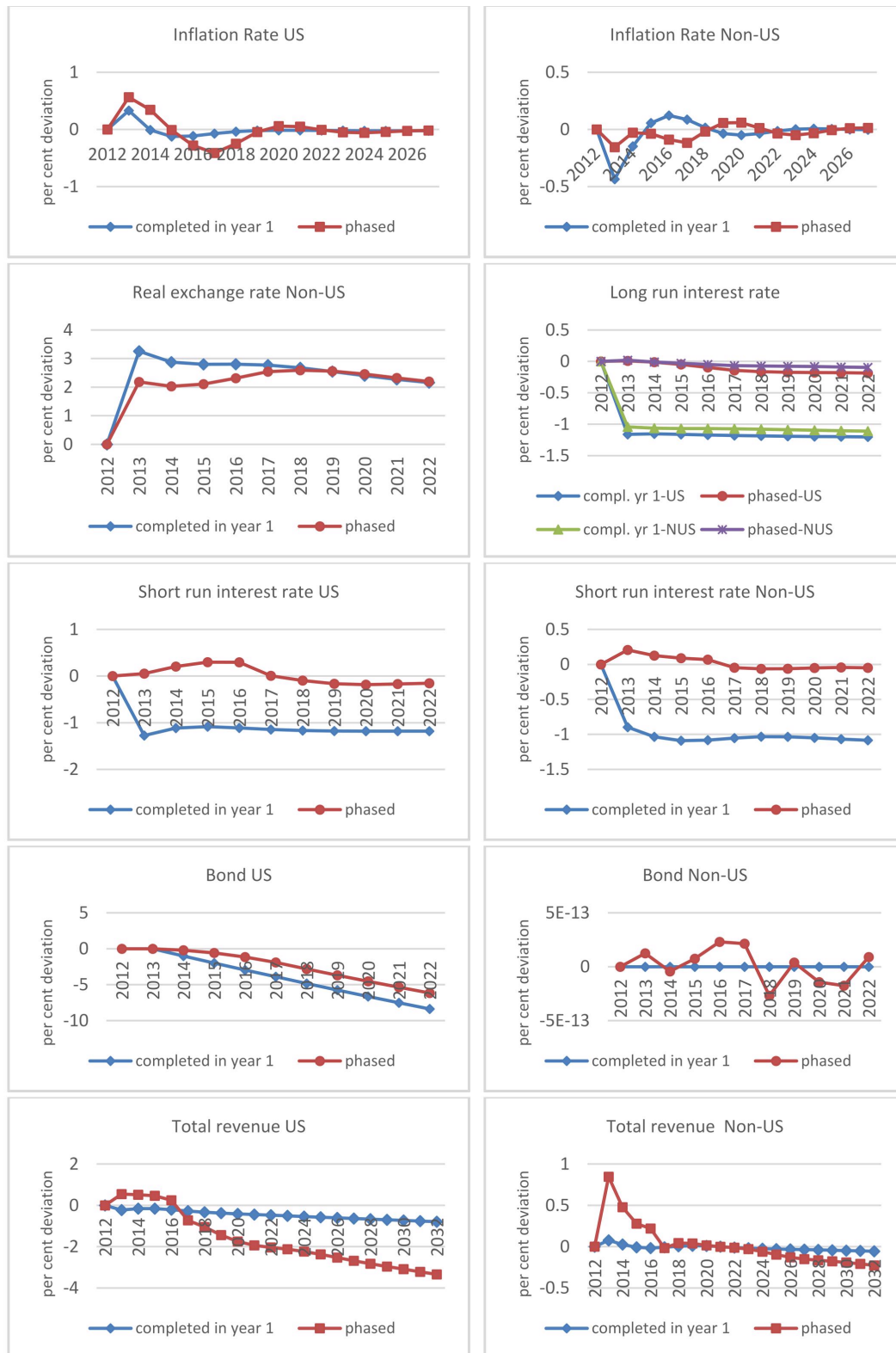


Figure 2: Economic effects of permanent reduction, completed in year 1 vs gradual - Simulation with G-Cubed (v114) model



is negatively transmitted. In contrast, under global scenario the shocks are positively transmitted.

As noted in the previous section, a budget deficit cut will improve balance of payments, lower private savings or build up private investment which are generated from Keynesian process of declining output and incomes (Allsop et al. 1999, pp. 292–293). Moreover, they notice that this Keynesian process takes place because of sticky prices and wages in the short run. If both US and the rest of the world apply the same amount of budget deficit cut, such falls in output and incomes will be transmitted to one another.

When US and the rest of the world undertake such fiscal contraction, their real outputs fall immediately in the first year. However, they finally become positive because of loosening financing constraint of smaller government stock of debt which previously holds economic activity back. The smaller stock of debt also means lowering taxes since the interest on bonds that must be paid is declining. In addition, under rational expectations, consumers take on the future tax upshot which is lower and they raise up their consumptions as there are revisions in the accumulation of human wealth. Rational expectations play an important role in this kind of shocks transmissions which are formulated in this G-cubed model (McKibbin–Tan 2009, p. 1035).

Another factor is that what happens to investment which also affects capital stocks. Since the agents are forward looking in this model, they consequently know how the economy will behave (McKibbin et al. 2014, p. 902). As they know that the output will be bouncing back after its drop in the first year, there will be an increase in investment resulting in rising capital stock in the short term due to higher expected rate of returns. This is also because under rational expectations, the firms know the future tax upshot, so that they use more greatly lower future interest rate to discount the output disincentive in the short run. In turn, it leads to a jump in investment and capital stock in the short run. They likewise understand that future output will be slowing down, so that investment and capital stock slightly fall before it gets constant as the output gets stable.

As shown in Figure 3, the outputs of both US and the rest of the world fall less in year 1 under global scenario before it immediately gets better. Because the currency of the rest of the world appreciates so tiny, or in other words US dollars depreciation is

insignificant, there is only very little changes in the trade balance nearly zero. It also delivers much less fluctuations in the inflation rate (see Figure 4). As a result, interest rates response closely to zero. That is why the adjustment costs are lower under the global scenario compared to the rapid scenario.

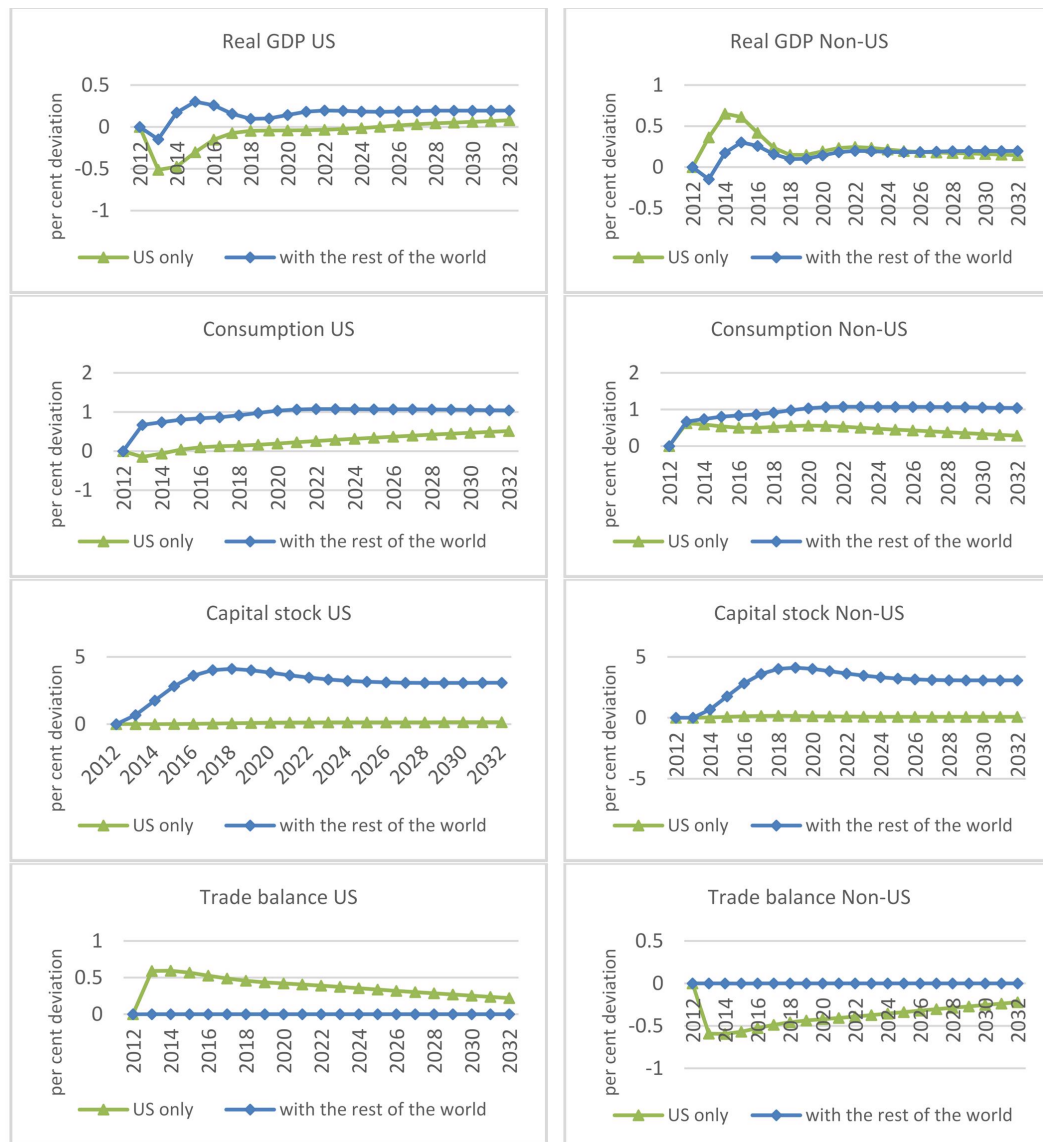


Figure 3: Effects on national account, US only vs global - Simulation with G-Cubed (v114) model

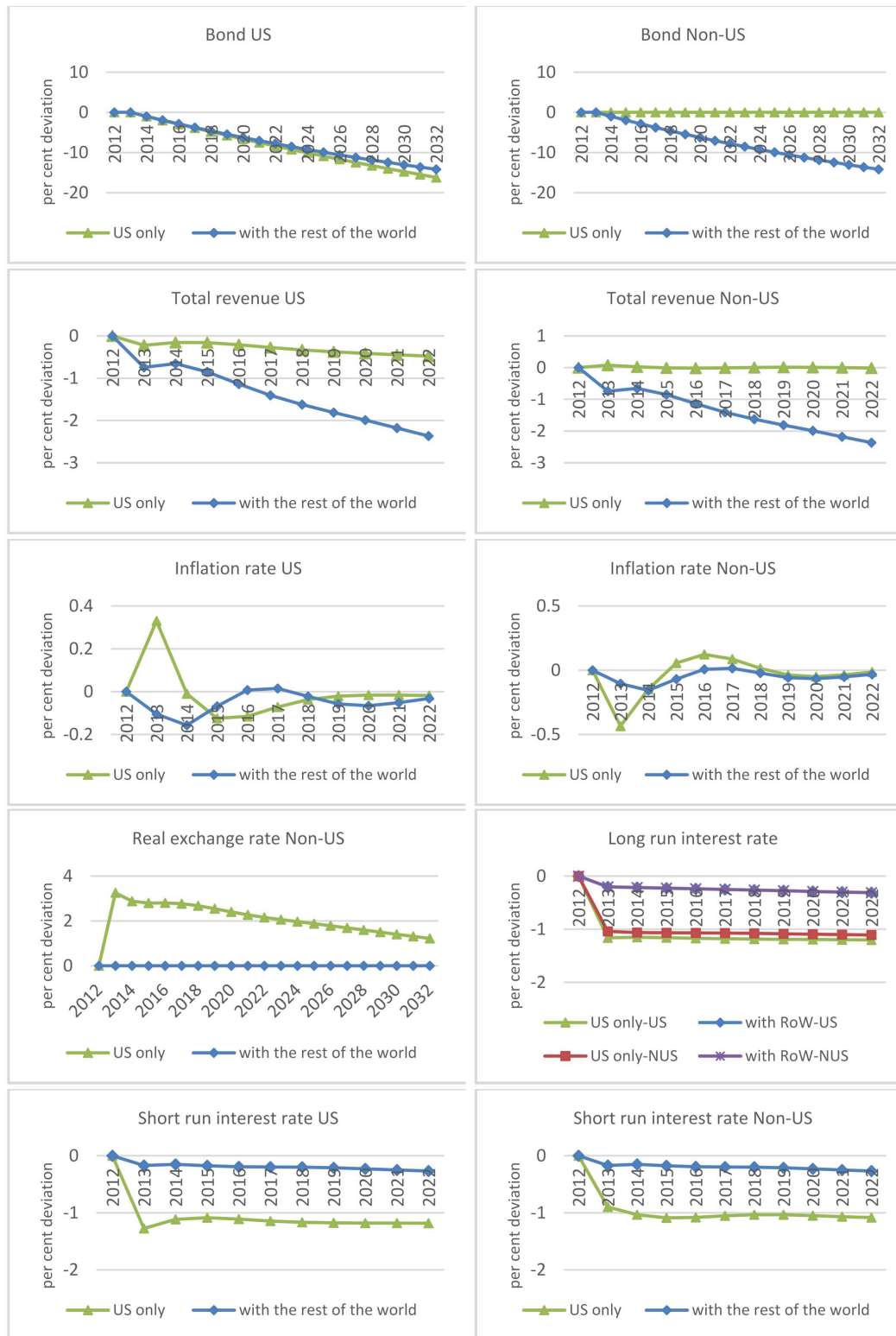


Figure 4: Economic effects of permanent reduction, US only vs global - Simulation with G-Cubed (v114) model

## 4 Conclusions

In conclusion, a permanent rapid shock in the US economy is less contractionary to the US economy and leads to more expansionary stimulus to the rest of the world in the short run. The reason is because the cost of adjustment comes more quickly and the economy more quickly recovers after the budget cut is carried out. Under the phased US budget cuts, the US economy runs into higher adjustment costs of asset prices, so the economy worsens more in the medium run. Conversely, the rest of the world gains more under the phased scenario in the short run as more capital inflows and less trade balance worsens. Under the global scenario, the demand shocks are positively transmitted, whereas under the rapid scenario by US only the shock is transmitted negatively to the rest of the world. In order to gain the sustainable growth of the world economy in the long run, US deficits cut followed by the rest of the world, the global scenario, is the best option because there will be enough incentives brought on the economies through forward looking responses.

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